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DEER-FLY FEVER, OR PAHVANT VALLEY PLAGUE.

A DISEASE OF MAN OF HITHERTO UNKNOWN ETIOLOGY.

By EDWARD FRANCIS, Surgeon, United States Public Health Service.

In recent years there has occurred among the rural population of Millard County, Utah, a disease initiated (according to popular belief) by a fly bite on some exposed surface of the body and manifested by the enlargement of the lymph glands which drain the bitten area and by a fever of a septic type lasting from 3 to 6 weeks. The site of the bite and the affected lymph glands become tender and inflamed, and they commonly suppurate. There is marked prostration and the patient is confined to his bed. Probably two dozen cases occurred in Millard County in each of the years 1917, 1918, and 1919. The first case known to have terminated fatally was reported in 1919.

In response to a request from Dr. T. B. Beatty, State health commissioner of Utah, to the Surgeon General of the United States Public Health Service for the detail of an officer to investigate this new disease, the writer was directed to proceed to Salt Lake City for the purpose of conferring with Commissioner Beatty and to make a study of deer-fly fever. Following a conference with Commissioner Beatty at Salt Lake City on July 23, 1919, and acting upon his recommendation, the writer proceeded to Delta, Utah, for conference with Dr. H. L. Charles.

Dr. Charles was found to be very much interested in the investigation. He took me with him on visits to his patients; put at my disposal the facilities of his office; furnished a place to house laboratory animals, and gave freely of his time and assistance.

The Disease Reproduced in Animals.

The first object of the investigation was the reproduction of the disease in animals, in order that animals thus infected might be transported to a well-equipped laboratory for detailed study.

A typical case of deer-fly fever was selected, and from this case two series of guinea pigs and rabbits were inoculated. The first series was inoculated with the patient's blood; the second series was inoculated with pus obtained from a suppurating cervical gland of the patient.

Both series of animals developed a disease which proved fatal in a few days. At post-mortem these cases exhibited caseation of the lymph glands and small necrotic foci throughout the liver and spleen. Subinoculations with lymph glands, liver, or spleen of infected animals into healthy ones invariably reproduced the same lesions.

Cultures.

Cultures made on ordinary laboratory media from the lesions of animals dying from the disease were negative; but cultures made upon coagulated egg yolk yielded a growth of small nonmotile cocco-bacilli. These cultures reproduced the lesions of the disease in guinea pigs.

Identification.

Dr. McCoy¹ in 1911 described in detail a new plague-like disease which he found in the ground squirrels of California. The lesions found in the experimental animals used in this investigation are apparently those of the plague-like disease described by McCoy.

Drs. McCoy and Chapin² in 1912 succeeded for the first time in growing the causative agent of the plague-like disease of rodents. They cultured the organism on coagulated egg yolk and named it *Bacterium tularense*. The small cocco-bacillus appearing upon coagulated egg yolk after inoculation with liver or spleen of the writer's experimental animals is probably the *Bacterium tularense*.

An infection of man with this organism has been described by Wherry and Lamb.³

CORRECTIONAL METHODS AND REFORMATION OF JUVENILE DELINQUENTS.

By W. L. TREADWAY, Passed Assistant Surgeon, United States Public Health Service.

Mental hygiene stands in very definite relationship to the causes, care, and prevention of mental diseases. It is important not only because of the serious death toll resulting from such disorders, but also because of the economic inefficiency resulting from the inability of a number of individuals suffering from even mild types to adjust themselves properly to difficult situations in life. Furthermore, such individuals are in frequent conflict with the customs and conventions of society. Reports of crimes and misdemeanors committed by them convey a very definite meaning to those who are familiar with the abnormalities of conduct of persons suffering from mental diseases.

¹ A Plague-like Disease of Rodents (Public Health Bulletin No. 43). By George W. McCoy, Passed Assistant Surgeon, United States Public Health Service. 1911.

² *Bacterium Tularense* the Cause of a Plague-like Disease in Rodents (Public Health Bulletin No. 53). By George W. McCoy and Charles W. Chapin, Passed Assistant Surgeons, United States Public Health Service. 1912.

³ Jour. of Infectious Diseases, 1914, vol. 15, p. 331.